

## Bonding Practice Test

Select the best answer.

- 1) A mutual electrical attraction between the nuclei and valence electrons of different atoms that binds the atoms together is called a(n)
- a) dipole.
  - b) Lewis structure.
  - c) chemical bond.
  - d) London force.

Read each question or statement, and write your response in the space provided.

- 2) Why do most atoms form chemical bonds?

Select the best answer.

- 3) When atoms share electrons, the electrical attraction of an atom for the electrons is called the atom's
- a) electron affinity.
  - b) electronegativity.
  - c) resonance.
  - d) hybridization.
- 4) If the atoms that share electrons have an unequal attraction for the electrons, the bond is called
- a) nonpolar.
  - b) polar.
  - c) ionic.
  - d) dipolar.
- 5) The greater the electronegativity difference between two bonded atoms, the greater the percentage of
- a) ionic character.
  - b) covalent character.
  - c) metallic character.
  - d) electron sharing.
- 6) The pair of elements that forms a bond with the least ionic character is
- a) Na and Cl.
  - b) H and Cl.
  - c) O and Cl.
  - d) Br and Cl.

## Bonding Practice Test

- 7) A molecule is a
- a) negatively charged group of atoms held together by covalent bonds.
  - b) positively charged group of atoms held together by covalent bonds.
  - c) neutral group of atoms held together by covalent bonds.
  - d) neutral group of atoms held together by ionic bonds.
- 8) In a molecule of fluorine, the two shared electrons give each fluorine atom \_\_\_\_\_ electron(s) in the outer energy level.
- a) 1
  - b) 2
  - c) 8
  - d) 32
- 9) The electron configuration of nitrogen is  $1s^2 2s^2 2p^3$ . How many more electrons does nitrogen need to satisfy the octet rule?
- a) 1
  - b) 3
  - c) 5
  - d) 8
- 10) In drawing a Lewis structure, the central atom is the
- a) atom with the greatest mass.
  - b) atom with the highest atomic number.
  - c) atom with the fewest electrons.
  - d) least electronegative atom.
- A.  $\text{Cl}-\text{H}:$     B.  $:\text{H}-\text{Cl}:$     C.  $:\text{H}-\ddot{\text{Cl}}:$     D.  $\text{H}-\ddot{\text{Cl}}:$
- 11) What is the Lewis structure for hydrogen chloride, HCl?
- a) A
  - b) B
  - c) C
  - d) D



## Bonding Practice Test

16) Draw a Lewis structure for the sulfate ion,  $\text{SO}_4^{2-}$ .

Select the best answer.

17) In metals, the valence electrons

- |  |                                    |
|--|------------------------------------|
| a) are attached to particular positive ions. | b) are shared by all of the atoms. |
| c) are immobile.                             | d) form covalent bonds.            |

18) According to VSEPR theory, the shape of an  $\text{AB}_3$  molecule is

- |                     |                 |
|---------------------|-----------------|
| a) trigonal planar. | b) tetrahedral. |
| c) linear.          | d) bent.        |

19) According to VSEPR theory, the structure of the ammonia molecule,  $\text{NH}_3$ , is

- |               |                 |
|---------------|-----------------|
| a) linear.    | b) bent.        |
| c) pyramidal. | d) tetrahedral. |

20) Use VSEPR theory to predict the shape of carbon dioxide,  $\text{CO}_2$ .

- |                |               |
|----------------|---------------|
| a) tetrahedral | b) linear     |
| c) bent        | d) octahedral |

21) The intermolecular attraction between a hydrogen atom bonded to a strongly electronegative atom and the unshared pair of electrons on another strongly electronegative atom is called

- |                       |                       |
|-----------------------|-----------------------|
| a) electron affinity. | b) covalent bonding.  |
| c) hydrogen bonding.  | d) electronegativity. |

22) The following molecules contain polar bonds. The only nonpolar molecule is

- |                    |                           |
|--------------------|---------------------------|
| a) $\text{HCl}$ .  | b) $\text{H}_2\text{O}$ . |
| c) $\text{CO}_2$ . | d) $\text{NH}_3$ .        |

## Bonding Practice Test

23) A polar molecule contains

a) ions.

b) a region of positive charge  
and a region of negative  
charge.

c) only London forces.

d) no bonds.

### ANSWER KEY

1) c

2) Atoms form chemical bonds to establish a more-stable arrangement. As independent particles, they are at high potential energy. By bonding, they decrease their potential energy, thus becoming more stable.

3) b

4) b

5) a

6) d

7) c

8) c

9) b

10) d

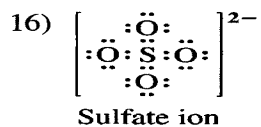
11) d

12) b

13) c

14) c

15)



## Bonding Practice Test

### ANSWER KEY

17) b

18) a

19) c

20) b

21) c

22) c

23) b